

[0014] On the other hand, even when the device is being carried and not being used for transmission, sometimes the user need to know some information, such as identity of the caller, signal sensitivity, cell boundaries, battery life remaining and the presence of phone messages. However, the conventional phone devices **21**, **40** do not permit the user to check the display, because the display sections **26**, **46** are entirely hidden from view in the folded carrying condition.

#### SUMMARY OF THE INVENTION

[0015] It is an object of the present invention to provide a portable phone device to enable viewing the function keys and a minimum necessary display area even when the device is folded so that the functionality is improved without compromising portability.

[0016] The object has been achieved in a portable phone device comprising: a first casing member and a second casing member freely rotatably joined to the first casing member about a transverse rotation axis disposed in a plane containing the first casing member, wherein a longitudinal dimension of the first casing member is different from a longitudinal length of the second casing member, and the first casing member includes first component parts including at least a display section, a keyboard section, a transmitter section and a part of a receiver section, and the second casing member includes other component parts excluding the first component parts.

[0017] Accordingly, by folding the second casing member over the first casing member, the phone device is made shorter for ease of carrying. Further, when the phone is in the folded position, the two members do not superimpose totally so that function keys can be accessed through an available viewable area to facilitate certain operations such as power on/off, mode switching, and message dispatching and the like.

[0018] In a variation of the basic design, the display section and the operational section can be located on different surfaces, thus making the function keys accessible to enable to perform communication operations even when the phone is in the folded condition.

[0019] Furthermore, by using a liquid crystal touch panel for the keyboard section, the display and keyboard functions can be combined in one location so that the size of the operational area can be reduced significantly to make the phone device even more compact, compared with the conventional personal communication devices having separate display and keyboard sections.

#### BRIEF DESCRIPTION OF THE DRAWINGS

[0020] FIGS. 1A-1C are a plan view, a side view and a schematic internal view, respectively, of a first embodiment of the portable phone device of the present invention.

[0021] FIG. 2 is a block circuit diagram of the first embodiment of the portable phone device.

[0022] FIGS. 3A-3B are a plan view and a side view, respectively, of a second embodiment of the portable phone device of the present invention.

[0023] FIGS. 4A-4B are a plan view and a side view, respectively, of a variation of the second embodiment.

[0024] FIG. 5 is a block circuit diagram of a variation of the first and second embodiments of the portable phone device.

[0025] FIG. 6 is a perspective view of an example of the conventional portable phone.

[0026] FIG. 7 is a perspective view of another example of the conventional portable phone in the folded condition.

[0027] FIG. 8 is a perspective view of the portable phone shown in FIG. 7 in the unfolded condition.

[0028] FIG. 9 is a perspective view of the portable phone shown in FIG. 7 in the receiving mode.

#### DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0029] In the following, preferred embodiments will be presented with reference to the drawings.

[0030] As shown in FIG. 1, the portable phone device **18** comprises a casing member **1** and a movable casing member **7** which is rotatably joined to the casing member **1** through a hinge section **5** disposed transversely to the longitudinal direction of the phone device **18**. On the surface of the casing member **1**, there are provided a display section **2**, a keyboard section **3** and a transmission device **4** successively below the hinge section **5**. A receiver device **6** is disposed on the movable casing member **7**. An antennae **11** is provided on the exterior of the casing member **1** while on the interior of the casing member **1**, there are provided a battery **10**, radio circuit **12** and a control circuit **13**, as shown in FIG. 1C. However, the locations of these component members need not be limited to those shown in FIG. 1C.

[0031] The configuration of the internal radio circuit of the phone device **18** is shown in FIG. 2. In more detail, the radio circuit **12** is operatively connected to the control circuit **13** and receives and transmits signals through the antennae **11**. The control circuit **13** is also operatively connected to the display section **2**, the keyboard section **3**, transmission device **4** and the receiver device **6** to exchange signals among these component devices and circuits.

[0032] The control circuit **13** performs display operations for the display section **2** and signal exchange operations for the radio circuit **12** according to the command signals from the keyboard section **3**. A memory section is provided in the control circuit **13** to store various information input from the keyboard section **3**, and the control section **13** displays various information stored in the memory section in the display section **2** according to the command from the keyboard section **3**.

[0033] The movable member **7** can be rotated 180 degrees with respect to the function surface (i.e., the surface containing the keyboard section **3** and the display section **2**), as shown in FIGS. 1B and 1C. When the movable member **7** is in the open position by being rotated 180 degrees about the hinge section **5**, the length of the portable phone **18** is such as to position the receiver device **6** to correspond with an ear of the user, and the transmission device **4** to the mouth of the user.

[0034] On the other hand, when the movable member **7** is folded in the direction ② indicated by a bi-directional arrow,